NEW IDENTITY AND FORMULAS FOR SOLVING MATHEMATICAL PROBLEMS

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Introduction

From time to time, discoveries are made whenever problems arise.

This mentioned identity is discovered by me to solve the mathematical problem, Beal conjecture. Beal conjecture is Fermat's last Theorem (Fit).

Beal's conjecture is, if $A^x + B^y = C^z$ where A, B, C, x, y and z are positive integers and x, y and z are greater than 2, then A, B and C must have a common prime factor.

Identity

(i) $2^1 + 2^1 = 2^2$, $2^2 + 2^2 = 2^3$, $2^2 + 2^3 = 2^4$

.....

(ii) $3^1 + 3^1 + 3^1 = 3^2$, $3^2 + 3^2 + 3^2 = 3^3$, $3^3 + 3^3 + 3^3 = 3^4$

.....

(iii) $4^1+4^1+4^1+4^1 = 4^2$, $4^2+4^2+4^2+4^2=4^3$, $4^3+4^3+4^3+4^3=4^4$

.....

Like this, it can be continued further.

Solution to the Beal Conjecture is driven from the identity mentioned at serial number 1.

Beal conjecture: $A^x+B^y=C^z$

Formula to solve above conjecture is :

$A^{P2} + (B=A^P) = [A^2]^{\frac{P^2+1}{2}}$

Take P=3 (P is an odd number greater than 2)

A=2, $B=2^3=8$, $C=A^2=2^2=4$, $x=P^2=3^2=9$, $y=P=3$, $z=2^9+8^3=4^5$, The common factor of A, B and C is 2.

Take P=5

A=2, $B=A^P=2^5=32$, $C=A^2=2^2=4$, $x=P^2=5^2=25$, $y=P=5$,

$z= \frac{P^2+1}{2} = \frac{25+1}{2} = 13$

$2^{25}+3^{25} = 4^{13}$, the common factor of A, B and C is 2.

Take P=7

A=2, $B=A^P=2^7=128$, $C=A^2=2^2=4$, $x=P^2=7^2=49$, $y=P=7$,

$z= \frac{P^2+1}{2} = \frac{49+1}{2} = 25$

$2^{49}+128^7=4^{25}$, The common factor of A, B and C is 2.

Like this, it can be continued further by taking P value as any odd number greater than 2. We can slightly change this formula and we can find the solution to this problem.

P= any odd number greater than 2.

Take P=3

$A=B^P$, B=2, $C=B^2$, x=P, $y=P^2$, $z= \frac{P^2+1}{2}$

$8^3+2^9=4^5$, the common factor of A, B and C is 2

Take P=5

$A=B^P=2^5=32$, B=2, $C=B^2=2^2=4$, x=P=5, $y=P^2=5^2=2^5$,

$z= \frac{P^2+1}{1}$ $32^5+2^{25}=4^{13}$, the common factor of A, B and C is 2.

Like this, it can be continued further by taking P value as any odd number greater than 2.

The following formulas prove that mentioned identity is true for solving math's problems

1. $A^{2X}+B^{X}=C^{2X+1}$, here A=2,B=A^2, C=A, X is a whole number
2. $A^{4X}+B^{2X}+C^{X}=D^{4X+1}$, here A=3, B=$A^2$, C=$A^4$, D=A , X is a whole number
3. $A^{8X}+B^{4X}+C^{2X}+D^{X}= E^{8X+1}$, here A=4, B=$A^2$, C=$A^4$, D=$A^8$, E=A, X is a whole number. Like this, it can be continued further.

About the Beal and Conjecture

Andrew Beal is a number theory enthusiast who resides in Dallas, Texas. He has a particular interest in some of Fermat's work and has spent many, many hours thinking about Fermat's Last theorem. He is the founder/chairman/owner of Beal Bank, Dallas's largest locally owned bank. He is also the recent founder/CEO/ owner of Beal Aerospace, which is designing and building the next generation rocket for launching satellites into earth's orbit.

Andy Beal wrote many letters to mathematics periodicals and number theorists. Among the replies, two were considered responses from number theorists. Dr Harold Edward from the department of mathematics at New York University and author of 'Fermat's Last Theorem: A Genetic Introduction to Algebraic Number Theory' confirmed that the discovery was unknown and called it 'quite remarkable'. Dr Earl Taft from the department of mathematics at Rutgers University relayed Andy Beal's discovery to Jarell Tunnel who was 'an expert on Fermat's Last Theorem according to Taft's response, and he also confirmed that the discovery and conjecture were unknown. There is no known evidence of prior knowledge of Beal's conjecture and all reference to it begin after Andy Beal's 1993 discovery and subsequent dissemination of it (Mourya, 2014). The related ABC conjecture hypothesises that only a finite number of solutions could exist.

Conclusion

The mentioned identity and formulas would help the teacher and students to understand the difficult mathematical problems and to find the solutions of the mathematical problems.

References

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